

What is claimed is:

1. A machinable light weight sisal-based concrete structural building material comprising:

5           (a) sisal fibers in a range from about 22% (v/v) to about 33% (v/v),  
             (b) a cement in a range from about 12% (v/v) to about 22% (v/v), and  
             (c) a light weight mineral substance in a range from about 51% (v/v) to  
about 59% (v/v).

10          2. The machinable light weight sisal-based concrete structural building material of Claim 1, wherein said light weight mineral substance is perlite.

15          3. The machinable light weight sisal-based concrete structural building material of Claim 2, wherein said cement is Portland cement.

20          4. The machinable light weight sisal-based concrete structural building material of Claim 3, wherein said sisal fibers have a length in a range from 0.75 inch to about 2.0 inches.

25          5. The machinable light weight sisal-based concrete structural building material of Claim 4, wherein said sisal fibers are in a range from about 25% (v/v) to about 30% (v/v).

6. A machinable light weight sisal-based concrete structural building material comprising:

- (a) sisal fibers in a range from about 22% (v/v) to about 33% (v/v),
- 5 (b) a cement in a range from about 12% (v/v) to about 22% (v/v),
- (c) a light weight mineral substance in a range from about 51% (v/v) to about 59% (v/v), and
- (d) a sufficient amount of an air-entraining agent.

10 7. The machinable light weight sisal-based concrete structural building material of Claim 6, wherein said light weight mineral substance is perlite.

15 8. The machinable light weight sisal-based concrete structural building material of Claim 7, wherein said cement is Portland cement.

9. The machinable light weight sisal-based concrete structural building material of Claim 8, wherein said sisal fibers have a length in a range from 0.75 inch to about 2.0 inches.

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10. The machinable light weight sisal-based concrete structural building material of Claim 9, wherein said sisal fibers are in a range from about 25% (v/v) to about 30% (v/v).

11. The machinable light weight sisal-based concrete structural building material of Claim 10, wherein said air-entraining agent is an aqueous solution of hydroaromatic and fatty carboxylic acids.

5           12. A method of producing a machinable light weight sisal-based concrete structural building material comprising steps of:

(a) mixing a pre-measured amount of a cement with a pre-measured amount of a light weight mineral substance thoroughly to form an uniform solid mixture;

10          (b) adding a pre-measured amount of water, and mixing said water with said solid mixture thoroughly to form a sludge;

(c) adding a pre-measured amount of sisal fibers, and mixing the sisal fibers into the sludge thoroughly to form an uniform final composition; and

15          (d) pouring said final composition into a mold, and setting said final composition in said mold to a solid form structural building material;

              wherein said structural building material can be machined, screwed, cut, and nailed.

20          13. A method of producing a machinable light weight sisal-based concrete structural building material of Claim 12 further comprising adding a sufficient amount of an air-entraining agent, and mixing said air-entraining agent with said final composition, prior to pouring said final composition into said mold.

14. A method of producing a machinable light weight sisal-based concrete structural building material of Claim 12, wherein said light weight mineral substance is perlite.

5        15. A method of producing a machinable light weight sisal-based concrete structural building material of Claim 14, wherein said pre-measured amount of said cement is in a range from about 12% (v/v) to about 22% (v/v) of a total of solid contents.

10        16. A method of producing a machinable light weight sisal-based concrete structural building material of Claim 15, wherein said pre-measured amount of said perlite is in a range from about 51% (v/v) to about 59% (v/v) of said total solid contents.

15        17. A method of producing a machinable light weight sisal-based concrete structural building material of Claim 16, wherein said pre-measured amount of said sisal fiber is in a range from about 22% (v/v) to about 33% (v/v) of said total solid contents.

20        18. A method of producing a machinable light weight sisal-based concrete structural building material of Claim 17, wherein said sisal fibers have a length in a range from about 0.75 inch to about 2.0 inches.